equal to 40. This results in a diameter for the sheave being at least 320 mm or 380 mm, respectively. (Column 1, lines 36-43)

The *Baranda* reference clearly teaches away from using such large sized sheaves because that imposes higher and more expensive requirements. "The larger the sheave diameter D, the greater torque required from the machine to drive the elevator system." (Column 1, lines 41-45) The *Baranda* reference then goes on to explain how more recent developments have allowed for smaller sheave sizes. The *Baranda* reference mentions U.S. Patent Nos. 4,022,010; 4,624,097; 4,887,422 and 5,566,768 as example publications describing synthetic fiber ropes. Those types of ropes are recognized as having better flexibility than steel ropes, which allows for reducing the required ratio between the sheave diameter and the rope diameter and allows for reducing the sheave diameter. One limitation associated with those ropes is that the inverse relationship between the sheave diameter and the rope pressure limits the possible reduction in sheave diameter. (Column 2, lines 3-9)

Part of the motivation for *Baranda's* disclosed example flat belts is to minimize the diameter of the sheave as much as possible. "In addition, minimizing the diameter D of the sheave permits the use of less costly, more compact, high speed motors as the drive machine without the need for a gear box." (Column 2, lines 50-52) "As stated previously, smaller sheave diameters reduce the required torque of the machine driving the sheave and increase the rotational speed. Therefore, smaller and less costly machines may be used to drive the elevator system." (Column 2, lines 60-64)

When discussing a liner 42 of an example embodiment and replacing such a liner in column 6, lines 9-19, the *Baranda* reference teaches that the sheave may be diminished so much

compared to the conventional larger sheaves that "it may be less expensive to simply replace the entire sheave rather than replacing sheave liners."

Overall, a main theme in the *Baranda* reference is reducing sheave diameter from that used with conventional steel ropes (or even aramid fiber ropes) when using a flat belt tension member as disclosed in *Baranda's* specification.

No reasonable interpretation of the *Baranda* reference would lead one to incorporate a 320 mm or even larger diameter sheave with a flat belt. Instead, only a smaller sheave combination with a flat belt would be reasonable from the teachings of the *Baranda* reference on its face. The Examiner is going contrary to the teachings of the *Baranda* reference when making the proposed combination of a 320 mm sheave from the *Baranda* reference with the flat belt of the *Yaginuma* reference. That combination cannot be made because it is directly contrary to the teachings of the *Baranda* reference.

Applicant believes that the Examiner is misinterpreting column 7 of the *Baranda* reference based upon the Examiner's comments provided in paragraph 75 of the most recent Office Action. The Examiner stated, "Baranda et al. does not compare a belt and round steel rope but rather five 3 mm aramid fiber ropes and four 10 mm SISA core steel wire ropes." If the Examiner is contending that column 7 of the *Baranda* reference is comparing one round rope arrangement with another round rope arrangement, that interpretation is incorrect. When the *Baranda* reference refers to the "five 3 mm aramid fiber ropes," those are the ropes 26 in the example of Figure 6A of the *Baranda* reference ("... the use of three tension members, each with five 3mm aramid fiber ropes ..."). The three tension members in the paragraph from lines 33-43 of column 7, are flat belt tension members 22 as shown in the example of Figure 6A.

The *Baranda* reference teaches that using a flat belt of this type in place of 10 mm SISAL core steel wire ropes provides an 80% reduction in sheave size. Using the 10 mm rope diameter and the required ratio that the sheave diameter be 40 times greater than the steel rope diameter provides for a 400 mm diameter sheave in that example. Reducing the 400 mm diameter sheave by 80% results in an 80 mm sheave. If one were to use the belt of *Yaginuma* with an 80 mm sheave, that would result in a ratio of groove width to sheave diameter (e.g., 1.5/80 = .019) that is outside of the scope of Applicant's claims.

The *Baranda* reference in column 7 at lines 40-43 describes a 60% sheave diameter reduction for an 8 mm aramid fiber rope arrangement. It is important to note that the art does not teach using the 320 mm sheave with the aramid ropes. Instead, everything indicates that the aramid ropes allow for reducing sheave diameter and, therefore, the only reasonable interpretation is that the sheave diameter used with the 8 mm aramid fiber ropes from line 42 of column 7 of the *Baranda* reference was less than 320 mm. The portions of column 2 referenced above demonstrate that *Baranda* teaches using smaller diameter sheaves when using aramid ropes compared to using steel ropes. The patents cited in column 1 of the *Baranda* reference also indicate that smaller sheave diameters are used with the aramid ropes compared to the sheave diameters used for steel ropes. U.S. Patent No. 4,624,097, for example, teaches that a sheave is preferably 24 times larger in diameter than an aramid rope. That same patent also teaches that the sheave diameter could be 17 times greater than the rope diameter. Nothing in the *Baranda* reference teaches anything different regarding the size of a sheave for an aramid rope arrangement. Taking the information that would be presented to the skilled artisan considering the *Baranda* reference and the *Yaginuma* reference, using the "sheave diameter is 24 times rope diameter" teaching from the '097 patent cited in the *Baranda* reference and combining that with

Yaginuma's 1.5 mm groove width does not result in Applicant's claimed invention. Using an 8 mm aramid rope and a sheave having a diameter that is 24 times larger (e.g., 192 mm) and then reducing that sheave diameter by 60% and combining that with a 1.5 mm groove width from *Yaginuma* yields a result that is outside of the scope of Applicant's claims (e.g., 1.5/8 x 24 x 40%=.02).

Therefore, even if one could combine the belt of the *Yaginuma* reference with the sheaves actually taught by the *Baranda* reference for use with a belt, the result would not be Applicant's claimed invention and there is no *prima facie* case of obviousness.

The *Baranda* reference does not teach any other sheave size for use with a flat belt. The minimum sheave diameter for a steel rope that one could reasonably interpret from the *Baranda* reference is 320 mm as described in column 1. Given that the *Baranda* reference repeatedly teaches reducing sheave diameter as much as possible, it is not a reasonable interpretation of the teachings of that reference to suggest using that 320 mm sheave or a lower reduction than an 80% reduction (e.g., arbitrarily selecting a non-disclosed, different sheave size) when attempting to make a combination with the *Yaginuma* reference. There is absolutely no motivation from either reference for doing that. The only basis for twisting the teachings of the *Baranda* reference in that manner would be hindsight reasoning using Applicant's claims as a template for attempting to piece together the *Baranda* and *Yaginuma* references. That is not permissible under 35 U.S.C. §103 and the proposed combination cannot be made.

There is no motivation for making the combination proposed by the Examiner. The Examiner proposes to combine one of the large sheave from the *Baranda* reference that is useful with steel ropes with a flat belt from *Yaginuma*. Nothing in either reference suggests such a result. As discussed above, the *Baranda* reference clearly teaches away from using such a large

sheave with a flat belt. The *Yaginuma* reference does not teach using a large sheave, either. Even being generous, the diameter of the pulley 20 in Figure 1 is not even twice the width of the belt of the *Yaginuma* reference, which is expressly taught as being 25 mm. In other words, the *Yaginuma* reference does not show a sheave that is even 50 mm in diameter. Certainly nobody looking at the teachings of that reference would be lead to incorporate a 320 mm sheave. Given that and the fact that the *Baranda* reference repeatedly teaches using smaller diameter sheaves for flat belts, there is no motivation to lead one skilled in the art to make the type of combination suggested by the Examiner.

Additionally, the Examiner's rejection of claims 5 and 6, which concern incorporating an expected speed into the selection of sheave diameter and groove width finds no support whatsoever within the references. There is no possible *prima facie* case of obviousness against these two claims even if the Examiner were correct that the *Baranda* reference and the *Yaginuma* reference could be combined as the Examiner proposes.

Applicant respectfully traverse the rejection of claim 7 under 35 U.S.C. §103 based upon the combination of the *Baranda, Yaginuma* and *Aulanko* references. The proposed addition of the *Aulanko* reference teachings does nothing to fill the void in the rejection of claim 5. In other words, even adding the teachings of the *Aulanko* reference does not establish a *prima facie* case of obviousness because even if the proposed combination of those three references could be made, the result is not what is claimed by Applicant. Whatever speed of operation you select from any reference does not make the improper combination of the *Baranda* reference and the *Yaginuma* reference into an arrangement that would be the same as Applicant's claim 7.

Applicant respectfully traverse the rejection of claims 8, 13 and 14 under 35 U.S.C. §103 based upon the proposed combination of the *Baranda, Yaginuma* and *Hull* references. The base

combination does not teach what the Examiner contends as already explained above. Further, there is no motivation for adding a fillet from the *Hull* reference to the belt of the *Yaginuma* reference. The Examiner contends that it would be obvious to add such a fillet to "improve the belt life and reduce the noise during operation." There is no indication that the addition of the end 46 of the *Hull* reference to the *Yaginuma* belt would have anything to do with "improving belt life" so that that conclusion appears to be based purely on the Examiner's speculation.

Moreover, there is no motivation for adding an end 46 from the *Hull* reference to the grooves of the *Yaginuma* reference for the purpose of reducing noise. The *Yaginuma* reference places grooves at an oblique angle to essentially eliminate any noise associated with those grooves. This is expressly taught in the *Yaginuma* reference. In paragraph 11, for example, it says, "There is almost no difference in the sound pressure level between sample C with no grooves and sample B of the first application example with linear oblique grooves (13)." Because the groove alignment of the *Yaginuma* reference already eliminates any noise effect of the grooves such that it performs as if it were grooveless, there is no motivation for adding another feature to "reduce noise." *Yaginuma* already addresses that problem and adding another, redundant feature cannot be done in an attempt to manufacture a *prima facie* case of obviousness. Therefore, the proposed combination of the *Baranda, Yaginuma* and *Hull* references cannot be made.

Applicant respectfully traverses the rejection of claims 15 and 16 based upon the proposed combination of the *Baranda* and *Hull* references. There is no motivation for making this combination. The *Hull* reference teaches that the grooves 28 are for enhancing the flexibility of the belt construction for use around pulleys of small diameters. (Column 2, line 66 – column

3, line 8) The *Baranda* reference discloses a tension member that already has great flexibility. There is no reason to add grooves to that belt based on the teachings of the *Hull* reference.

Moreover, the *Yaginuma* reference expressly teaches that grooves on a belt introduce undesirable noise. Applicant's background also describes that problem. There is no motivation for adding grooves to the *Baranda* belt because that would add a source of noise that is recognized as undesirable in elevator systems. Therefore, there is no motivation for making the proposed combination of the *Baranda* and *Hull* references and there is no *prima facie* case of obviousness.

Applicant respectfully traverses the rejection of claim 17 under 35 U.S.C. §103 based upon the *Hull* reference. It appears that the Examiner is proposing to take a feature of the longitudinal grooves of the *Hull* reference and incorporate them into a transverse groove on the *Hull* reference for the purpose of "increasing the amount of material providing a longer life span." That finds no support within the *Hull* reference and such a modification is not a reasonable extension of the teachings of the *Hull* reference. The Examiner acknowledges in paragraph 69 of the Office Action that a radius of curvature of the ends 46A of the transverse grooves 28 in the *Hull* reference is 1.19 mm. The Examiner then tries to take the .004 inch radius of curvature for the longitudinal grooves and substitute that into the transverse grooves of the *Hull* reference. If it were beneficial to do that, the *Hull* reference would have done that. The *Hull* reference expressly teaches different radii of curvature at the edges of the transverse and longitudinal grooves, respectively. If using the longitudinal groove feature on the transverse grooves had any benefit such as providing longer useful life, the *Hull* reference certainly would have taught that. *Hull*, as the inventor of the groove arrangement in that reference would have

recognized that benefit and would have expressly taught it if, in fact, there were any motivation for making the transverse grooves like the longitudinal grooves of that reference.

The Examiner's rejection of claim 17 appears to be based purely on hindsight reasoning and goes directly contrary to the teachings of the *Hull* reference, which are to provide different radii on the differently oriented grooves. There is nothing within the *Hull* reference that suggests the Examiner's modification of that reference. The Examiner's conclusion appears to be based purely on hindsight reasoning and an attempted reconstruction of the teachings of the *Hull* reference to manufacture a *prima facie* case of obviousness against Applicant's claim 17. That type of analysis is not permitted under 35 U.S.C. §103.

Applicant respectfully asks the Examiner to reconsider the rejections under 35 U.S.C. §103 in view of the comments above. Applicant requests a Notice of Allowance as soon as possible.

Respectfully submitted,

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CERTIFICATE OF FACSIMILE

I hereby certify that this Request for Reconsideration, relative to Application Serial No. 10/501,659, is being facsimile transmitted to the Patent and Trademark Office (Fax No. (571) 273-8300) on June 21, 2006.

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David Gaskey

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